REMARKS

1. Claim Rejections – 35 U.S.C. § 103(a) – Claims 1-4, 6-20, 22-27, 29-34

The Examiner has rejected claims 1-4, 6-20, 22-27, and 29-34 under 35 U.S.C. § 103(a) as being unpatentable over Nair *et al.* (hereinafter "Nair") (USPN 6,675,226). Applicants respectfully traverse this rejection. For brevity, only the bases for the rejection of the independent claims are traversed in detail on the understanding that the dependent claims are also patentably distinct over the cited references as they depend directly from their respective independent claim. Nevertheless, the dependent claims include additional features that, in combination with those of their respective independent claim, provide further, separate, and independent bases for patentability.

The Examiner has admitted that Nair does not teach "a general purpose device controller employing asynchronous true real time peripheral device control, wherein the device controller interfaces between the peripheral devices and a non-true real time computer having a non-true real time operating system and a non-true real time-enabled circuit board." Nevertheless, the Examiner has stated that she believes it would have been obvious to one of ordinary skill in the art to move the multi-network interface card (of the Nair system) outside of the computer since placing the card external to the computer would not change the functionality of the system. It is therefore implied that the Examiner believes that there are no functional differences between the claimed invention and the Nair system. With this position, the Applicants respectfully disagree. The Examiner has based this position on the propositions (1) that the rearranging of parts of an invention involves only routine skill in the art, and (2) that constructing formerly integral structures in various elements involves only routine skill in the art.

Initially, Applicants respectfully point out that the Examiner's reliance on case law (*In re Japikse* and *In re Dulberg*) for the above-stated principles is not appropriate since these cases relate to mere mechanical devices and not to sophisticated computer networks and electronics, which is the field of the claimed invention (M.P.E.P. § 2144). *In re Japikse* relates to a sticker that is placed on a watch, and *In re Dulberg* relates to a lipstick holder with a removable cap. The facts of these cases are in no way similar to those of the present application.

Specifically, the control system utilized by Nair significantly alters a standard desktop computer 12 by inserting a true real time circuit board 42 into the computer. Furthermore, it should be appreciated that the Nair reference requires significant customization of the standard desktop computer 12, in addition to the true real time circuit board 42. These significant customizations include the requirements of: (1) a customized multi-network interface, (2) a customized configurations database, (3) customized API (application program interface) extensions, (4) a customized ADA (asynchronous data area) buffer, and (5) customized run-time programs. Moreover, in the claimed invention, **the general purpose device controller bears the burden of the real-time processing, instead of taxing the capabilities of the processor of the standard desktop computer 12, as in the Nair system**. This configuration enables the processor of the desktop computer to have full use of its processing power for other important functionalities. As such, the claimed invention functions in a fundamentally different manner than the Nair system, and is vastly different than a mere re-arranging of parts or separation of formerly integral structure into various elements, as suggested by the Examiner.

Otherwise stated, if the true real time circuit board of the Nair system was removed from the computer in order to modify this reference in an attempt to disclose or suggest the configuration of the claimed invention, this would not result in the functionality of the claimed invention. The Nair system would still contain the vast customizations described above and would still place the burden of the true real time processing on the processor of the standard, non-true real time, desktop computer.

Thus, for the Nair system to be in any way comparable to the claimed invention, the Nair system would have to transfer the burden of the real-time processing from the standard desktop computer to the general purpose device controller outside of the host computer. This would result in changing the principle of operation of the Nair system in an attempt to mimic the claimed invention. With respect to this type of obviousness rejection, the Manual of Patent Examining Procedure, § 2143.01, states "The Proposed Modification Cannot Change The Principle Of Operation Of A Reference." Thus, in accordance with M.P.E.P. § 2143.01 such as modification CANNOT be considered to be obvious to one of ordinary skill in the art.

Accordingly, in the Nair system, the burden of operation (i.e., processing load) is put on the primary processor of the host system in which the interface card (42) is installed. In this

regard, the Nair system uses a customized interface card that requires a customized database and customized ADA buffer within the host system. This is very burdensome on the host system of the Nair reference. Additionally, this provides for a further, sharp, contrast between the Nair system and the Applicants' claimed invention, in that the interface card in the Nair system requires the host system to execute customized Application Program Interfaces (APIs 60a and 60b) to control the interface card. This limits the Nair system to non-real-time API control calls over the host bus to the interface card. Execution of the customized APIs slows host processing, wherein each API is allotted a time-slice to provide control commands to the interface card. This API structure further slows operation of the interface card, which ultimately must wait for API commands to be processed by the non-real time host processor for operation.

A further burden of the Nair system is that it requires customization of application programs running on the host system so that the application programs can provide commands through the APIs to the interface card. Notably, the claimed invention does not have these drawbacks. Referring to Fig. 2 of the Applicants' specification, the real-time operations of the generic device controller are separated from the host system operations. This is more than just a mere physical separation of the generic device controller from the host processor (as the Examiner suggests). The configuration of the claimed invention enables the general purpose controller to carry the real-time processing load instead of shifting this processing load into the host processor, as is done by the Nair system. Additionally, the general purpose controller of the claimed invention has the freedom to perform true real-time operations, without the need to wait for specialized non-real time API calls burdening the host processor 40.

Indeed the Detailed Description section of the present application explains how the claimed invention is specifically designed to overcome the shortcomings of systems such as the Nair system. As the Detailed Description section explains:

> The generic device controller unit system 10 connects a processor 40 using a standard non-true real time operating system and peripheral devices 50 in such a manner as to employ true real time peripheral device control. The "true real time" device controller of the system 10 allows a standard non-true real time operating system to implement true real time control of the peripheral devices 50, instead of requiring a special "true real time" kernel or a special "true real time" layered operating system to be utilized with the processor 40. (p. 7, lns. 4-15).

The Examiner has stated that Nair renders claims 1-4, 6-20, 22-27, and 29-34 unpatentable. However, Nair does not teach or suggest the claimed element of "a general purpose device controller employing asynchronous true real time peripheral device control, wherein the device controller interfaces between the peripheral devices and a non-true real time computer having a non-true real time operating system and a non-true real time-enabled circuit board." Notably, the control system utilized by Nair significantly alters a standard desktop computer 12 by inserting a true real time circuit board 42 into the computer, as well as requiring substantial additional customizations in order to achieve true real time control using the non-true real time computer. See Fig. 2; Col. lines 16-17; and Col. 4, lines 57-58. Specifically, the Nair invention, which is attached inside of a standard desktop computer 12, is a multi-network interface that attaches to the memory 38 and operating system 44 of the desktop computer 12 in order to transform the non-true real time computer into a true real time computer. See Fig. 2; and Col. 4, lines 57-63. Importantly, Nair requires the processor of the standard desktop computer 12 to bear the burden of the real-time processing.

In stark contrast, the claimed invention does not alter, modify, or otherwise change a non-true real time computer into a true real time computer, but rather provides a general purpose device controller that employs true real time peripheral device control, and thus, enables an unaltered, non-true real time computer having a non-true real time operating system and a non-true real time-enabled circuit board to employ true real time peripheral device control over various peripheral devices. The ability to employ true real time control over various peripheral devices using an unaltered, non-true real time computer is an efficient, powerful, cost-reducing tool that is provided by the claimed invention. In this manner, in the claimed invention, the general purpose device controller bears the burden of the real-time processing, instead of taxing the capabilities of the processor of the standard desktop computer 12.

Thus, Nair does not teach or suggest "a general purpose device controller employing asynchronous true real time peripheral device control, wherein the device controller interfaces between the peripheral devices and a non-true real time computer having a non-true real time operating system and a non-true real time-enabled circuit board" as recited in the claimed invention. Accordingly, Applicants respectfully submit that the 35 U.S.C. § 103(a) rejection of claims 1-4, 6-20, 22-27, and 29-34 as being unpatentable over Nair has been overcome.

2. Claim Rejections – 35 U.S.C. § 103(a) - 5, 21 and 28

Claims 5, 21 and 28 are pending in the present application and were rejected under 35 U.S.C. § 103(a), as being unpatentable over Nair (USPN 6,675,226) and further in view of Microsoft Computer Dictionary, page 543. Applicants respectfully traverse this rejection. For brevity, only the bases for the rejection of the independent claims are traversed in detail on the understanding that the dependent claims are also patentably distinct over the cited references as they depend directly from their respective independent claim. Nevertheless, the dependent claims include additional features that, in combination with those of their respective independent claim, provide further, separate, and independent bases for patentability.

As described above, Nair does not teach or suggest "a general purpose device controller employing asynchronous true real time peripheral device control, wherein the device controller interfaces between the peripheral devices and a non-true real time computer having a non-true real time operating system and a non-true real time-enabled circuit board" as recited in the claimed invention. The Microsoft Computer Dictionary reference does not resolve any of the Nair deficiencies, and thus, claims 5, 21 and 28 are patentable for the same reasons stated above in Section 1. Accordingly, Applicants respectfully submit that the 35 U.S.C. § 103(a) rejection of claims 5, 21 and 28 as unpatentable over Nair in view of the Microsoft Computer Dictionary has been overcome.

CONCLUSION

Applicants have made an earnest and *bona fide* effort to clarify the issues before the Examiner and to place this case in condition for allowance. Reconsideration and allowance of all of claims 1-34 is believed to be in order, and a timely Notice of Allowance to this effect is respectfully requested. The Commissioner is hereby authorized to charge any additional required fees from Deposit Account No. 502811, Deposit Account Name BROWN RAYSMAN MILLSTEIN FELDER & STEINER LLP. Should the Examiner have any questions concerning the foregoing, the Examiner is invited to telephone the undersigned attorney at (310) 712-8319. The undersigned attorney can normally be reached Monday through Friday from about 9:30 AM to 6:30 PM Pacific Time.

Respectfully submitted,

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